AMENDMENT TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A method ~~Method~~ for ~~the~~ computer-assisted determination of an optimum-fuel control of nozzles according to a control instruction $b=Ax$, whereby

b represents a desired m-dimensional forces/torque vector,

A represents an m x n-dimensional nozzle matrix, and

x represents a ~~the~~ sought n-dimensional nozzle control vector and

the nozzle control vector should meet a ~~the~~ minimization criterion of

$J := \sum_{i=1}^{i=n} x_i \rightarrow \min$

~~wherein~~, the method comprising:

computer generating a ~~• A~~ defined matrix transformation of starting constraints for a ~~the~~ mass flow of the nozzles and of the minimization criterion ~~takes place in a computer-assisted manner,~~;

data processing a ~~• A data processing~~ representation of a geometric description of the matrix transformation of ~~matrix-transformed~~ starting constraints ~~takes place in a computer-assisted manner,~~;

searching, with ~~• Through~~ a computer-assisted geometric search procedure in ~~the~~ vector space, ~~a computer-assisted determination of~~ limiting point sets of the geometric description of the starting constraints ~~takes place,~~; and

applying the ~~• The~~ matrix transformation of ~~matrix-transformed~~ minimization criterion ~~is applied~~ to the points of the limiting point sets.

2. (Currently Amended) The method ~~Method~~ according to claim 1, wherein ~~• For~~ the matrix transformation of the starting constraints for the mass

flow of the nozzles includes [[,]] a homogenous solution of the control instruction according to $x_{ho}=A_o r$ ~~is defined~~, whereby

A_o: represents the $n\ x\ (n\text{-}m)$ dimensional zero space matrix of A, and

r: represents an $(n\text{-}m)$ dimensional vector of ~~any~~ real numbers, the method further comprising:

calculating, within a ~~• Within the~~ scope of a ~~the~~ use of the matrix transformation of the minimization criterion, ~~a computer-assisted calculation is made of~~ scalar products of a vector representation of points of the limiting point set and the vector

$$v_d^T := \left[\sum_{j=1}^{n} A_{0j1} \sum_{j=1}^{n} A_{0j2} \cdots \sum_{j=1}^{n} A_{0jp}\right], p := n - m$$

and

calculating an ~~• An~~ optimum-fuel solution ~~is calculated~~ with the aid of the vector r whose scalar product is minimal with the vector v_d.

3. (Currently Amended) The method ~~Method~~ according to claim 1, ~~wherein~~ further comprising:

converting the matrix transformation of the ~~• The matrix-transformed~~ starting constraints for the mass flow of the nozzles ~~is converted~~ in a computer-assisted manner into allowable multi-dimensional value regions [[,]];

forming, to ~~• To~~ determine the limiting point sets, ~~a formation of~~ at least one multi-dimensional cut set of ~~the~~ individual allowable multi-dimensional value regions ~~takes place~~ [[,]]; and

determining the ~~• The~~ limiting point sets ~~are determined~~ as those point sets that limit the at least one cut set.

4. (Currently Amended) The method ~~Method~~ according to claim 3, ~~wherein~~ further comprising:

repeatedly projecting ~~• A repeated projection of~~ the allowable multi-dimensional value regions of the dimension p ~~is made~~ on a dimension p-1, until a projection of the allowable value regions on limiting intervals of a dimension p=1 has been achieved; and

subsequently searching, with ~~• Subsequently~~ a computer-assisted search procedure, ~~carries out~~ a ~~computer-assisted~~ determination of limiting point sets as a cut set of limiting intervals.

5. (Currently Amended) A computer ~~Computer~~ program for the computer-assisted determination of an optimum-fuel control of nozzles according to a control instruction $b=Ax$, whereby

b represents a desired m-dimensional forces/torque vector,

A represents an m x n-dimensional nozzle matrix, and

x represents a ~~the~~ sought n-dimensional nozzle control vector and

the nozzle control vector should satisfy the minimization criterion of

$$J := \sum_{i=1}^{i=n} x_i \rightarrow \min$$

~~wherein~~, the computer program ~~contains~~ comprises:

a ~~• A~~ first program routine for defining ~~the computer-assisted execution of~~ a ~~defined~~ matrix transformation of starting constraints for a ~~the~~ mass flow of the nozzles and the minimization criterion [[,]];

a ~~• A~~ second program routine for ~~the computer-assisted execution of a~~ data processing a representation of a geometric description of the matrix transformation of the ~~matrix-transformed~~ starting constraints [[,]];

a ~~• A~~ third program routine for the ~~computer-assisted~~ execution of a geometric search procedure in the vector space for the ~~computer-assisted~~ determination of limiting point sets of the geometric description of the starting constraints [[,]]; and

a ~~• A~~ fourth program routine for the ~~computer-assisted~~ application of the matrix transformation ~~matrix-transformed~~ minimization criterion to the points of the limiting point sets.

6. (Currently Amended) A computer ~~Computer~~ program product containing a machine-readable program ~~carrier~~ on which a computer program according to claim 5 is stored in the form of electronically readable control signals.

7. (New) A computer control method to obtain optimum-fuel usage for nozzles based on a m-dimensional forces/torque vector, m x n-dimensional nozzle matrix, and a n-dimensional nozzle control vector that meets a minimization criterion, the method comprising:

generating a defined matrix transformation of starting constraints for a mass flow of the nozzles and of the minimization criterion;

data processing a representation of a geometric description of the matrix transformation of starting constraints;

searching, with a geometric search procedure in vector space, limiting point sets of the geometric description of the starting constraints; and

applying the matrix transformation of minimization criterion to the points of the limiting point sets.

8. (New) The method according to claim 7, wherein the control instruction is $b=Ax$, whereby

b represents the desired m-dimensional forces/torque vector,

A represents the m x n-dimensional nozzle matrix, and

x represents the sought n-dimensional nozzle control vector and

the nozzle control vector should satisfy the minimization criterion of

$J := \sum_{i=1}^{i=n} x_i \rightarrow \min.$

9. (New) The method according to claim 8, wherein the matrix transformation of the starting constraints for the mass flow of the nozzles includes a homogenous solution of the control instruction according to $x_{ho}=A_o r$, whereby

A_o: represents the *n x (n-m)* dimensional zero space matrix of *A,* and

r: represents an *(n-m)* dimensional vector of real numbers, the method further comprising:

calculating, within a scope of a use of the matrix transformation of the minimization criterion, scalar products of a vector representation of points of the limiting point set and the vector

$$v_d^T := \left[\sum_{j=1}^{n} A_{0j1} \sum_{j=1}^{n} A_{0j2} \cdots \sum_{j=1}^{n} A_{0jp} \right], p := n - m$$

and

calculating an optimum-fuel solution with the aid of the vector *r* whose scalar product is minimal with the vector v_d.

10. (New) The method according to claim 8, further comprising:

converting the matrix transformation of the starting constraints for the mass flow of the nozzles into allowable multi-dimensional value regions;

forming, to determine the limiting point sets, at least one multi-dimensional cut set of individual allowable multi-dimensional value regions; and

determining the limiting point sets as those point sets that limit the at least one cut set.

11. (New) The method according to claim 10, further comprising:

repeatedly projecting the allowable multi-dimensional value regions of the dimension p on a dimension p-1, until a projection of the allowable value regions on limiting intervals of a dimension p=1 has been achieved; and

subsequently searching a determination of limiting point sets as a cut set of limiting intervals.

12. (New) A computer program for determining an optimum-fuel control of nozzles according to a control instruction based on a desired m-dimensional forces/torque vector, an m x n-dimensional nozzle matrix, and a sought n-dimensional nozzle control vector where the nozzle control vector should satisfy a minimization criterion, the computer program comprises:

a first program routine for defining a matrix transformation of starting constraints for a mass flow of the nozzles and the minimization criterion;

a second program routine for data processing a representation of a geometric description of the matrix transformation of the starting constraints;

a third program routine for the execution of a geometric search procedure in the vector space for the determination of limiting point sets of the geometric description of the starting constraints; and

a fourth program routine for the application of the matrix transformation minimization criterion to the points of the limiting point sets.

13. (New) The computer program according to claim 12 wherein the control instruction is $b=Ax$, where:

b represents the desired m-dimensional forces/torque vector,

A represents the m x n-dimensional nozzle matrix, and

x represents the sought n-dimensional nozzle control vector and

the nozzle control vector should satisfy the minimization criterion of

$J := \sum_{i=1}^{i=n} x_i \to \min$.

14. (New) A computer program product containing a machine-readable program on which a computer program according to claim 12 is stored in the form of electronically readable control signals.